

CLAIMS

1. A semiconductor device comprising:
a load;
a transistor which supplies a first current to the load; and
5 a means for making a potential of a gate terminal of the transistor at a predetermined potential by flowing a second current to the transistor.
2. A semiconductor device comprising:
a display element;
10 a transistor which supplies a first current to the display element; and
a means for making a potential of a gate terminal of the transistor at a predetermined potential by flowing a second current to the transistor.
3. A semiconductor device comprising:
15 a signal line;
a transistor which supplies a first current to the signal line; and
a means for making a potential of a gate terminal of the transistor at a predetermined potential by flowing a second current to the transistor.
- 20 4. A semiconductor device comprising:
a load;
a transistor which supplies a first current to the load;
a means for making a potential of a gate terminal of the transistor at a first predetermined potential by flowing a second current to the transistor; and
25 a means for making a potential of the gate terminal of the transistor at a predetermined second potential by flowing a third current to the transistor.
5. The semiconductor device according to claim 4, wherein the load is a display element.

6. The semiconductor device according to claim 4, wherein the load is a signal line.

7. A semiconductor device comprising:
5 a load connected in series to a first switch;
a constant current source connected in series to a second switch;
a first power source line electrically connected to the load;
a first transistor electrically connected to the load and the constant current
source;
10 a second transistor electrically connected to the first transistor;
a second power source line electrically connected to the second transistor;
and
a third power source line electrically connected to gate electrodes of the first
and the second transistors,
15 wherein the gate electrode of the first transistor is electrically connected to
any one of a source electrode of the first transistor and a drain electrode of the first
transistor via a third switch; and
wherein a source electrode of the second transistor are electrically
connected a drain electrode of the second transistor via a fourth switch.

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8. The semiconductor device according to claim 7, wherein the load is a display element.

9. The semiconductor device according to claim 7, wherein the load is a
25 signal line.

10. The semiconductor device according to claim 7, comprising:
a capacitor electrically connected to the gate electrodes of the first and the
second transistors.

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11. The semiconductor device according to claim 7, further comprising a second constant current source electrically connected to the first transistor and connected in series to a fifth switch.

5 12. The semiconductor device according to claim 7, wherein a potential of the first power source line is higher than potentials of the second and the third power source lines.

10 13. The semiconductor device according to claim 7, wherein a potential of the first power source line is lower than potentials of the second and the third power source lines.

15 14. The semiconductor device according to claim 7, wherein widths of channel regions of the first and the second transistors are equal to each other.

 15. The semiconductor device according to claim 7, wherein a length of a channel region of the first transistor is longer than a length of a channel region of the second transistor.

20 16. The semiconductor device according to claim 7, wherein the first to fourth switches include any one of a transistor, a diode, a CMOS circuit and a logic circuit.

25 17. A semiconductor device comprising:
a load connected in series to a first switch;
a constant current source connected in series to a second switch;
a first power source line electrically connected to the load;
a first transistor electrically connected to the load and the constant current source;
30 a second transistor electrically connected to the first transistor;

a second transistor electrically connected to the first transistor;
a second power source line electrically connected to the second transistor;
and

a third power source line electrically connected to gate electrodes of the first
5 and the second transistors via a fourth switch,

wherein a gate electrode of the first transistor is electrically connected to
any one of a source electrode of the first transistor and a drain electrode of the first
transistor via a third switch, and

wherein a gate electrode of the second transistor is electrically connected to
10 the gate electrode of the first transistor via a fifth switch.

18. The semiconductor device according to claim 17, wherein the load is a
display element.

15 19. The semiconductor device according to claim 17, wherein the load is a
signal line.

20 20. The semiconductor device according to claim 17, further comprising a
capacitor electrically connected to the gate electrode of the first transistor.

21. The semiconductor device according to claim 17, further comprising a
second constant current source electrically connected to the first transistor and
connected in series to a sixth switch.

25 22. The semiconductor device according to claim 17, wherein a potential of
the first power source line is higher than potentials of the second and the third power
source lines.

30 23. The semiconductor device according to claim 17, wherein a potential of
the first power source line is lower than potentials of the second and the third power

source lines.

24. The semiconductor device according to claim 17, wherein widths of channel regions of the first and the second transistors are equal to each other.

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25. The semiconductor device according to claim 17, wherein a length of a channel region of the first transistor is longer than a length of a channel region of the second transistor

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26. The semiconductor device according to claim 17, wherein the first to fifth switches include any one of a transistor, a diode, a CMOS circuit and a logic circuit.

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27. A semiconductor device comprising:

a load connected in series to a first switch;

a constant current source connected in series to a second switch;

a first power source line electrically connected to the load;

a first transistor electrically connected to the load and the constant current source and connected to a third switch in series;

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a second transistor electrically connected to the load and the constant current source and connected to a fourth switch in series;

a second power source line electrically connected to the first transistor;

a third power source line electrically connected to the second transistor; and

a fourth power source line electrically connected to the load and the constant current source via a fifth switch and electrically connected to gate electrodes of the first and the second transistors.

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28. The semiconductor device according to claim 27,
wherein the load is a display element.

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29. The semiconductor device according to claim 27,
wherein the load is a signal line.

5 30. The semiconductor device according to claim 27, comprising
a capacitor electrically connected to gate electrodes of the first and the
second transistors.

10 31. The semiconductor device according to claim 27, comprising
a second constant current source electrically connected to the first and the
second transistors and connected in series to a sixth switch.

15 32. The semiconductor device according to claim 27,
wherein the potential of the first power source line is higher than potentials
of the second, the third, and the fourth power source lines.

33. The semiconductor device according to claim 27,
wherein the potential of the first power source line is lower than potentials of
the second, the third, and the fourth power source lines.

20 34. The semiconductor device according to claim 27,
wherein widths of channel regions of the first and the second transistors are
equal to each other.

25 35. The semiconductor device according to claim 27,
wherein a length of a channel region of the first transistor is longer than a
length of a channel region of the second transistor.

30 36. The semiconductor device according to claim 27,
wherein the first to fifth switches include any one of a transistor, a diode, a
CMOS circuit and a logic circuit.

37. A semiconductor device comprising:
a load connected in series to a first switch;
a constant current source connected in series to a second switch;
5 a first power source line electrically connected to the load;
a first transistor electrically connected to the load and the constant current
source and connected to a third switch in series;
a second transistor electrically connected to the load and the constant
current source and connected to a fourth switch in series;
10 a second power source line electrically connected to the first transistor;
a third power source line electrically connected to the second transistor; and
a fourth power source line electrically connected to the load and the
constant current source via a fifth switch and electrically connected to gate electrodes
of the first and the second transistors,
15 wherein a gate electrode is electrically connected any one of a source
electrode of the second transistor and a drain electrode of the second transistor.

38. The semiconductor device according to claim 37, wherein the load is a
display element.

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39. The semiconductor device according to claim 37, wherein the load is a
signal line.

40. The semiconductor device according to claim 37, further comprising a
25 capacitor electrically connected to a gate electrode of the first transistor.

41. The semiconductor device according to claim 37, further comprising a
second constant current source electrically connected to the first and the second
transistors and connected in series to a sixth switch.

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42. The semiconductor device according to claim 37, wherein a potential of the first power source line is higher than potentials of the second, the third, and the fourth power source lines.

5 43. The semiconductor device according to claim 37,
 wherein a potential of the first power source line is lower than potentials of the second, the third, and the fourth power source lines.

 44. The semiconductor device according to claim 37, wherein widths of
10 channel regions of the first and the second transistors are equal to each other.

 45. The semiconductor device according to claim 37, wherein a length of a
channel region of the first transistor is shorter than a channel region of the second
transistor.

15 46. The semiconductor device according to claim 37, wherein the first to
fifth switches include any one of a transistor, a diode, a CMOS circuit and a logic
circuit.

20 47. A driving method of a semiconductor device, comprising the steps of:
 supplying a first current to a transistor which supplies a current to a load;
 generating at a gate terminal of the transistor a first voltage required for the
transistor to flow the first current;
 supplying a second current to the transistor after generating the first voltage;
25 and
 generating at a gate terminal of the transistor a second voltage required for
the transistor to flow the second current.

 48. The driving method of a semiconductor device according to claim 47,
30 wherein the first current is larger than the second current.

49. A driving method of a semiconductor device comprising the steps of:
supplying a first current to a transistor which supplies a current to a load;
generating at a gate terminal of the transistor a first voltage required for the
5 transistor to flow the first current;
supplying a second current to the transistor after generating the first voltage;
generating at a gate terminal of the transistor a second voltage required for
the transistor to flow the second current;
supplying a third current to the transistor after generating the second
10 voltage; and
generating at a gate terminal of the transistor a voltage required for the
transistor to flow the third current.

50. The driving method of a semiconductor device according to claim 49,
15 wherein the first and the second currents are larger than the third current.